<u>We claim:</u>

1. An optical transceiver, comprising:

a diffractive optical element (DOE) configured to transmit an input optical beam;

a reflective surface configured to receive the transmitted optical beam from the DOE and direct a reflected optical beam to the DOE;

an optical detector; and

a mount configured to rotate the reflective surface so that the DOE diffracts at least a portion of the reflected optical beam to the optical detector.

2. The optical transceiver of claim 1, further comprising an index-matching material situated at the reflective surface.

3. The optical transceiver of claim 2, wherein the index-matching material extends from the reflective surface to the DOE.

4. The optical transceiver of claim 1, further comprising an optical support having a first surface configured to receive the diffracted portion of the reflected optical beam and to direct the diffracted portion to an output surface.

5. The optical transceiver of claim 1, wherein the DOE is configured to diffract at least a portion of the reflected optical beam to an output surface.

6. An optical transmitter, comprising:

a diffractive optical element (DOE) configured to receive an output optical beam and diffract at least a portion of the output optical beam;

a reflective surface configured to receive the diffracted portion of the output optical beam and direct a reflected portion to the DOE; and

a mount configured to rotate the reflective surface and select an orientation of the reflective surface, wherein the orientation of the reflective surface is associated with selection of a transmission direction.

7. The optical transmitter of claim 6, further comprising an index-matching material situated at the reflective surface.

8. The optical transmitter of claim 7, wherein the index-matching material extends from the reflective surface to the DOE.

9. The optical transmitter of claim 6, further comprising an optical support having a first surface configured to receive the output optical beam and to direct at least a portion of the output optical beam to the DOE.

10. The optical transmitter of claim 6, wherein the DOE is configured to diffract at least a portion of the output optical beam received from the first surface of the optical support to the reflective surface.

11. An optical transceiver, comprising:

a diffractive optical element (DOE); and

a reflective surface configured to receive an optical beam from the DOE and direct a reflected portion to the DOE, wherein the reflective surface is rotatable with respect to the DOE.

12. The optical transceiver of claim 11, wherein the DOE is bonded to an optical support.

stop

13. The optical transceiver of claim 11, wherein the DOE is configured to direct the optical beam to an output surface of the optical support based on a wavelength associated with the optical beam.

14. The optical transceiver of claim 11, wherein the optical support includes at least one concave or convex surface.

15. The optical transceiver of claim 13, wherein the optical support includes a surface configured to communicate the optical beam between the DOE and the output surface.

16. The optical transceiver of claim 15, wherein the surface of the optical support is configured to communicate the optical beam between the DOE and the output surface by total internal reflection.

17. The optical transceiver of claim 13, wherein a communication direction is selectable based on a rotation angle of the reflective surface with respect to the DOE.

18. An optical transceiver, comprising:

an optical support having a first surface configured to be situated adjacent a window, a second surface, and a coupling surface;

a diffractive optical element (DOE) situated adjacent the second surface;

a reflective optical surface; and

an optical mount adjustable to select an orientation of the reflective optical surface with respect to that DOE so that the DOE and the reflective optical surface direct a light flux from the first surface to the coupling surface, or direct a light flux from the coupling surface to the first surface.

19. The optical transceiver of claim 18, further comprising an index-matching fluid situated to reduce reflections of a light flux at the second surface.

20. The optical transceiver of claim 19, wherein the first surface comprises a reflective region configured to direct a light flux to the coupling surface or to the DOE.

21. The optical transceiver of claim 20, wherein the reflective region includes a reflective coating.

22. The optical transceiver of claim 21, wherein the reflective region is configured to provide total internal reflection.

23. A network, comprising:

at least two computer devices; and

an optical transceiver as recited in claim 18 and configured to interconnect the at least two computer devices.

24. A communication method, comprising:

receiving an optical signal beam;

directing the optical signal beam to a diffractive optical element (DOE); and

reflecting at least a portion of the optical signal beam received from the DOE back to the DOE; and

diffracting a portion of the optical signal beam received from the reflective surface with the DOE so that the diffracted portion is directed to an optical detector.

25. The communication method of claim 24, further comprising selecting a communication direction based on a rotation angle of the reflective surface with respect to the DOE.

26. The communication method of claim 25, wherein the step of selecting a communication direction includes adjusting the orientation angle of the reflective surface with respect to the communication direction.

27. The communication method of claim 26, further comprising directing the diffracted portion to the optical detector based on a wavelength associated with the optical signal beam.

28. A method of processing an optical signal, comprising:

directing the optical signal to a diffractive optical element (DOE);

receiving the optical signal from the DOE and adjusting an angle of reflection of the optical signal; and

diffracting at least a portion of the optical signal reflected to the DOE to a surface of an optical support so that the portion propagates in the optical support at an angle greater than a critical angle with respect to the surface.

29. The method of claim 28, further comprising directing the optical signal to a surface of the optical support having optical power.

30. The method of claim 29, wherein the optical power of the surface is based on a surface curvature.